



Environment and  
Climate Change Canada

Environnement et  
Changement climatique Canada

## Country Profile:

**Grenada**

## 1. PHYSICAL GEOGRAPHY

The archipelagic, independent state of Grenada comprises mainly of three islands namely Grenada, Carriacou, and Petit Martinique and is centred on 11°58' N Latitude, and 61°20' W Longitude (UNFCCC 2000). Grenada lies between Trinidad and Tobago to the south and St. Vincent and the Grenadines to the north in the Eastern Caribbean and is the southernmost of the Windward Islands (UNFCCC 2000; <http://weather.mbiagrenada.com/>). The Island of Grenada is 34 km (21 miles) long and 18km (12 miles) wide and the three islands taken together have a land area of 345 sq. km (133 sq. miles) (UNFCCC 2000; <http://weather.mbiagrenada.com/>). Generally, the country is characterised by mountainous terrain ringed by extensive coral reefs. The highest point, Mt. St. Catherine lies 833 meters above sea level (UNFCCC 2000).



Figure 1 Map of Grenada. (Credit: Wiki Commons)

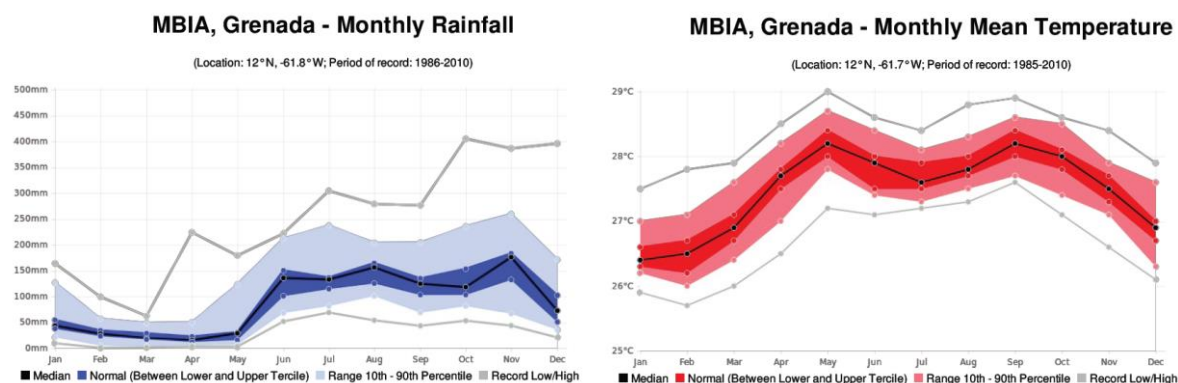
The country is characterized by humid tropical climate, with relatively constant temperatures throughout the year averaging about 27.5°C (<http://rcc.cimh.edu.bb/>). The average annual rainfall totals range from around 1150 mm in the extreme southwest to over 3000 mm in the higher elevations. The wet season occurs annual through June to November, during which time the island receives more than

100 mm each month. Rich, volcanic soils and the elevated rainfall allow for dense rainforest over much of the inland regions, with a more drought tolerant natural vegetation type in the southwest.

## 2. CLIMATOLOGY

The Grenada National Meteorological Service (<http://weather.mbiagrenada.com/?q=grenada>) monitors the Meteorological Station at the Maurice Bishop International Airport (MBIA), where its office is located. The Rainfall and temperature for this station (1985-2015) is summarized in table 1 below.

The rainfall and temperature climatology at Maurice Bishop International Airport (MBIA) (1985/6-2010) are presented in Figure 2, with summary statistics presented in Table 1. As a rugged island located between the Atlantic Ocean and the Caribbean Sea, annual precipitation totals are high in most places, though with an intense dry season, especially from February to April in which rainfall is almost invariably below 50 mm per month. In some years, the wet season starts in May. From June onwards, rainfall commonly hovers 150 mm each month, with a range of 100 mm to 150 mm between the 10<sup>th</sup> and the 90<sup>th</sup> percentile. The wettest months on record have occurred either in October, November or December, showing that the wet season sometimes lasts until the end of the year. The annual temperature range is between 26.5°C in January and 28.2°C in May and again in September.



**Figure 2** 1981-2010 reference climatology of monthly rainfall totals (left) and mean near-surface air temperature (right) at the Maurice Bishop airport station on Grenada. Source: [rcc.cimh.edu.bb](http://rcc.cimh.edu.bb) (data from Grenada Meteorological Service)

**Table 1. Summary statistics of rainfall and temperature for the Maurice Bishop International Airport on Grenada**

Station Name	Maurice Bishop International Airport (Year/Month of Occurrence)
Mean Annual Rainfall	1161 mm (1986-2015)
Wettest year / Month / three month period	1513.3 mm (2004) / 405.1 mm (Oct. 2008) / 752.2 mm (Sep. to Nov. 2008)
Driest Year / Month / three month period	790.6 mm (2009) / 0.8 mm (Feb. 2010) / 21.9 mm (Jan. to

	Mar. 2010)
<b>Mean Temperature</b>	27.5 °C (1985-2015)
Warmest Year / Month / three month period	28.1 °C (1998) / 29 °C (May 1987 & 1988) / 28.7 °C (Jul. to Sep. 1998)
Coldest Year / Month / three month period	26.8 °C (1989) / 21.9°C (Jan. 1981) / 23.8 °C (Dec. 1980 to Feb. 1981)

Source: <http://rcc.cimh.edu.bb/>

### 3. SOCIO-ECONOMIC LANDSCAPE

In 2014, Grenada's population was estimated at 106,300 (<http://data.worldbank.org/country/Grenada>). The UNDP (2012) Human Development Index (HDI) for Grenada was 0.770- which puts the country in the high HDI category and positions it at 63 out of 187 countries and territories (UNDP 2013). The (2014) GDP was estimated by the World Bank at USD 911.8 million (USD 8577/ capita). Agriculture is the chief economic activity and the island is internationally renowned as the Isle of Spice as it is the second largest (second only to Indonesia) exporter of nutmegs in the world. Tourism is also an important income earning sector and one main attraction is the famous Grand Anse beach (UNFCCC 2000).

### 4. KEY NATIONAL STAKEHOLDERS AND THEIR NEEDS

A 2015-2016 survey of user climate information needs in the Caribbean captured responses from 9 sectoral users in the agriculture, water, disaster risk management and health sectors. There were no responses from the tourism and energy sectors. Five representatives from the agriculture, DRM and tourism sectors participated in stakeholder interviews in 2016, while two stakeholders from the DRM and health sectors participated in focus group discussions convened in May 2016.

Users obtain climate information from a variety of sources including the National Meteorological and Hydrological Services and the Caribbean Institute for Meteorology and Hydrology. Users believe that climate services are of high value in their organisation's operations and planning and as such, they routinely try to integrate climate information considerations into their professional decisions to inform day-to-day strategic planning in their organisations. One health user in Grenada reported that climate information is used to guide "the decision-making process on ARIs<sup>1</sup> and water-borne disease in high risk communities to prevent an epidemic". Agriculture stakeholders indicated that they use climate information to get an indication of water availability for irrigation, as well as, to make crop choices based on the precipitation outlooks.

Some challenges with climate information were noted. DRM users for example indicated that some climate information may not be used due to a lack of in-house expertise to interpret the information: "...maybe it's just the technical expertise to interpret the information and make it user friendly, like end-user friendly. So sometimes we get it and we don't know what to do with it because we don't have that expertise readily...". One agriculture stakeholder also identified a key barrier to collaboration, noting that "how our Met service is...set up...makes... the availability of the staff to work along with us on... projects outside of just weather issues... a challenge..". One health stakeholder raised the lack of awareness of high level health decision-makers during the 2014-2016 drought which may indicate a lack

<sup>1</sup> Acute respiratory infections.

of awareness particularly of drought early warning products routinely issued by the CIMH. Users in Grenada have called for products that are: 1) user-friendly, 2) island-specific in offering local level analysis, as well as, 3) offering clear impacts forecasting statements for sectors. Finally, health users would like to see specialised health-climate products developed.

## 5. RANGE OF CLIMATE SERVICES

As of September 2015, the Meteorological Department of the Grenada Airports Authority (GAA) reports that the organisation can be classified as a Category 1 climate services provider offering a basic range of climate data services and information products. The organisation tailors all 7 of the regionally produced climate products<sup>2</sup> for the national context which it summarises and presents to the National Emergency Advisory Committee on a monthly basis.

The socio-economic sectors that currently benefit from climate information in Grenada are the water, disaster risk management, health, energy and tourism sectors. Specific organisations with which the GAA interacts<sup>3</sup> are:

- The Ministry of Agriculture;
- The National Disaster Management Agency; and
- The Ministry of Health.

The agriculture, construction, legal and finance sectors have been identified as sectors that could potentially benefit from the provision of climate services going forward. The level of interaction between the Meteorological Department and users of climate information is reported to be low, since the organisation does not routinely collect feedback from users, nor are users engaged during the climate service project. Grenada has not yet convened a National Climate Outlook Forum.

The Meteorological Department of the GAA recommendations for improving its climate services capability include:

1. An enhanced network of automatic weather stations;
2. Increased access to a wider set of meteorological parameters;
3. The acquisition of a Climate Database System that is WMO approved;
4. Training in database management;
5. A dedicated research division that is sufficiently funded and has a clear long-term research strategy;
6. Establishment of formal links with tertiary institutions to carry out applied research;
7. The mainstreaming of research into the routine operations of the Department;
8. Training and capacity in the development of climate service tools and products, especially for climate monitoring, prediction, impact modelling and reporting;

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<sup>2</sup> These are the Caribbean Standardised Precipitation Index (SPI) Outlook, the Caribbean Drought Bulletin, the CariCOF Caribbean Outlook Newsletter, the CariCOF Precipitation Outlook, the CariCOF Temperature Outlook, the CariCOF Drought Outlook and the Regional Agroclimatic Bulletin.

<sup>3</sup> Information gleaned from participant lists from 6 regional meetings, namely: 1) the 2014 Wet Season CariCOF, May 2014; 2) the 2014 Dry Season CariCOF, November 2014; 3) the 2015 Wet Season CariCOF, May 2015; 4) the 2015 Dry Season CariCOF, November 2015; 5) the Workshop on Enhancing Climate Indices for Sector-specific applications in the Caribbean, 15-19 February, 2016; and 6) the 2016 Wet Season CariCOF, May 2016.

9. Training and capacity building in interpreting climate information; and
10. The launch of a dedicated website for the department that is now under construction.

## **6. REFERENCES**

United Nations Framework Convention on Climate Change (UNFCCC). 2000. Grenada' First National Communication to the UNFCCC.

United Nations Development Programme (UNDP). 2013. Human Development Report 2013. The Rise of the South: Human Progress in a Diverse World. Explanatory note on 2013 HDR Composite Indices- Grenada

### **Web Sites**

<http://rcc.cimh.edu.bb/>

<http://weather.mbiagrenada.com/>

<http://data.worldbank.org/country/Grenada>